



Research Article

Parental attitudes toward learning from home and conspiracy beliefs in the transition out of the COVID-19 pandemic

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In response to the COVID-19 pandemic, schools in Indonesia adopted the learning from home [LFH] method as early as March 2020. By June 2021, at the height of the pandemic, we surveyed 254 parents from 24 provinces in Indonesia whose children had been engaged in LFH for over a year and compared the results with a similar survey conducted among parents in 2020 during the onset of the pandemic. Using latent class analysis, we identified a new majority of pragmatic parents who viewed LFH as useful yet demanding. In contrast, the number of parents with positive attitudes, who considered LFH both useful and not demanding, declined significantly, while the proportion of parents with negative attitudes remained consistent. Hierarchical logistic regression revealed that beliefs in COVID-19 conspiracy theories were strong predictors of negative attitudes toward LFH, with interactions based on the sex and age of the parents. We discuss how the decline in positive attitudes may have stemmed from challenges associated with increased reliance on advanced technology and explore the potential effects of conspiracy beliefs on children's compliance with COVID-19 safety measures and overall trust in educational institutions. As schools transitioned back to in-person learning, with LFH being phased out by mid-2022, this study provides valuable insights into the shifts in parental attitudes during a critical phase of the pandemic. Understanding these attitudes remains crucial as educational systems continue to adapt to post-pandemic realities and prepare for potential future disruptions in a rapidly evolving global environment.

Keywords: COVID-19 pandemic, conspiracy beliefs, learning from home, parental attitudes

1. Introduction

By June 2021, daily COVID-19 vaccine doses administered worldwide reached its peak (Mathieu et al., 2020, 2021) and some governments had slowly loosened or planned to loosen restrictions (Burki, 2021; Michelini et al., 2021). However, new COVID-19 cases in some countries kept on the rise (Dyer, 2021a). Among those, cases with the new variants of concerns (e.g., gamma, delta) caused more severe impacts and greater deaths (Roy et al., 2021). In India, for instance, the second wave of COVID-19 reduced supplies of essential treatments and increased death rates especially among young people (Asrani et al., 2021). In Brazil, COVID-19 positivity rates and related deaths occurred at an alarming pace even above the theoretical herd immunity threshold (Castro et al., 2021; Sabino et al., 2021). In Indonesia, the sharp escalations of COVID-19 cases and deaths in many regions made the country become the new epicenter in Asia (Dyer, 2021b). These crises forced some local governments including Indonesia to reinstate policies for COVID-19 mitigation including but not limited to the learning from home (LFH) policy.

Suddenly enforced as early as March 2020, LFH elicited a range of reactions from both students and parents as well as bringing new consequences and challenges to all parties involved. In Norway, for example, students reported having more creative tasks despite receiving more school homework during LFH whereas their parents reported gaining more insight into their children's learning (Bubb & Jones, 2020). In contrast, in the Republic of Ireland, the majority of students reported less learning gain during LFH while their parents, who had no choice but to be involved in the process, experienced exceptional stress (Flynn et al., 2021). Similar contrasting issues also

occurred among educators worldwide. Of 1487 K-12 teachers surveyed in 118 countries, as much as 57% managed to adapt and modify their teaching methods while the rest were barely able to utilize such technologies to support their “new” pedagogy (Jelińska & Paradowski, 2021). In developing countries such as India, the latter group also encountered technology constraints related to device suitability and bandwidth availability (Muthuprasad et al., 2021).

Regardless of the various reactions and challenges entail with it, closing schools and moving toward distance learning, which is what LFH essentially is, was one of the most effective non-pharmaceutical interventions to prevent COVID-19 transmission in society (Auger et al., 2020; Brauner et al., 2021; Haug et al., 2020). As a result, many governments periodically reintroduced LFH during surges in cases. By mid-2021, in Indonesia, LFH was still the norm as part of efforts to control the pandemic. However, with the gradual containment of COVID-19 and the widespread availability of vaccines, schools across Indonesia began a cautious reopening in mid-2022, marking the end of the pandemic-induced restrictions on in-person learning (Karana, 2022). This transition signaled a critical shift from emergency responses to longer-term recovery, with governments and educational institutions now focusing on addressing learning losses and adapting to a post-pandemic reality. This study, conducted in June 2021, thus captures a pivotal moment in parental attitudes toward LFH, providing insights into the challenges and considerations that persisted as society moved toward the end of the pandemic.

1.1. Parental Attitudes toward Learning from Home

Studies have highlighted that parents played significant roles in determining the success of the LFH policy (Daniela et al., 2021; Darragh & Franke, 2022; Lawrence & Fakuade, 2021). In this respect, since teachers cannot closely observe and interact with the students as they used to do in the pre-pandemic setting, it is the parents or the guardians, who are expected to ensure that learning activities occur as intended. Indeed, this involvement varies partly depending on the students' age and conditions. The younger the students and the more specific the student's conditions are (e.g., students with special needs), the more involvement is expected from the parents (Darragh & Franke, 2022; Lau et al., 2021). Additionally, given today's context in which most LFH activities require advanced information technologies (e.g., mobile devices, WiFi, computers), parents who are more digitally literate and financially secure are likely better equipped to support their children's education at home (Daniela et al., 2021; Ribeiro et al., 2021).

Considering the importance of parent involvement in LFH, such positive attitudes are thus needed, if not necessary, for the program to succeed. While this has been the case in some developed countries with good e-learning infrastructures and higher adult literacy rates such as Norway (Bubb & Jones, 2020), New Zealand (Darragh & Franke, 2022), Finland and Portugal (Levinthal et al., 2021), it has remained rare in some other places. In China, for example, the vast majority of parents (92.7%) held negative attitudes on the LFH policy (Dong et al., 2020). They were concerned with the lack of peer interaction, their children's insufficient self-regulation, and their own limited ability to support their children's education during LFH. The fact that most of them also struggled with basic needs due to the pandemic, made them have even more negative attitudes and prefer face-to-face classes instead (Cui et al., 2021). Similarly, in the Philippines, parents showed negative sentiments toward LFH since the policy required them to tutor their children at home (Agaton & Cueto, 2021). This practice was less feasible especially for parents who have experienced economic hardships during the pandemic.

Meanwhile in Indonesia, where the adult literacy gap and digital divide are still considerably at high stake (Pratama, 2017; Pratama & Scarlatos, 2020a, 2020b), parents have shown various attitudes ranging from positive at one extreme to negative at the other (Pratama & Firmansyah, 2021). In this regard, parents with positive attitudes, who made up the majority of the participants (41%), considered LFH effective and agreed that the policy was the best option amid the pandemic. On the contrary, parents with negative attitudes (36%) considered LFH less effective, expensive, and as extra work that forced them to learn more. Somewhere in the spectrum, the rest of the parents (23%) were disengaged, in which they did not consider LFH useful, nor did they see it as

demanding. Pratama and Firmansyah (2021) further revealed that it is personal computer ownership at home that is associated with the positive attitudes after controlling for demographic variables. This finding confirms past studies highlighting the roles of parents' digital literacy and socio-economic status in determining their degree of parent involvement in LFH (Daniela et al., 2021; Ribeiro et al., 2021). On the other hand, being a father of younger children is associated with the negative attitudes albeit this conclusion has not given the full picture yet. Further investigation is needed to understand the deeper factors behind some Indonesian parents' negative attitudes toward the LFH policy.

1.2. Conspiracy Theories around COVID-19 Pandemic

Conspiracy theories entail explanations for an unusual occurrence or circumstance that implies the existence of a covert malevolent and powerful group, typically motivated by political motives (Goertzel, 1994; van Prooijen & Jostmann, 2013). These hypothetical ideas are different from a conspiracy, the latter of which refers to any clandestine scheme involving certain individuals or groups (Barkun, 2015). A famous example of conspiracy theories is that the Apollo moon landings in 1969 had been faked in a Hollywood studio by some federal government agencies for various reasons such as embezzlement of the public treasury (Launius, 2010). Another well-known example is climate change, which is nothing more than a scientifically sound attempt by renewable energy companies to profit from their products (Douglas & Sutton, 2015). Past studies highlight that these irrational beliefs were associated with a higher level of anxiety (Grzesiak-Feldman, 2013), lower level of analytic thinking (Swami et al., 2014), and lower level of education (Douglas et al., 2016).

In the COVID-19 context, such conspiracy theories circulating through word-of-mouth (Astapova, 2020) and social media (Su et al., 2021), articulate that SAR-CoV-2 virus causing COVID-19 disease is a biological warfare made by a group of scientists in a secret lab in Wuhan, China (Thacker, 2021). Furthermore, the theories also state that the pandemic is actually a global scenario, which has been carefully planned years ago by powerful state actors such as the Chinese or US governments (Douglas, 2021; Nie, 2020) or private actors such as the American billionaire Bill Gates (Shahsavari et al., 2020). Belief in these theories has manifested into various harmful actions such as resistance to perform social distancing (Bierwiazzonek et al., 2020), noncompliance to wear a mask in public places (Prichard & Christman, 2020), and hesitance to get vaccinated (Sallam et al., 2021). These behaviors have indeed had severe consequences including a spike in COVID-19 cases and deaths (Romer & Jamieson, 2021).

Considering the extent to which the belief in COVID-19 conspiracy theories has pervasively driven people against COVID-19 mitigation measures, we argue that parents who believe in such theories would likely hold negative attitudes toward the LFH policy. In contrast, parents who are not engaged in the COVID-19 conspiracy theories would likely hold positive attitudes toward the policy.

1.3. Research Objectives

This study, conducted in Indonesia, seeks to examine parents' attitudes toward the Learning from Home (LFH) policy during the COVID-19 pandemic after it had been in effect for more than a year. The research aims to uncover any changes in these attitudes over time. Additionally, this study explores the role of COVID-19 conspiracy beliefs in shaping parents' negative attitudes toward LFH. The specific research questions are: How have parents' attitudes toward the LFH policy changed after more than a year of implementation? To what extent do beliefs in COVID-19 conspiracy theories influence parents' attitudes toward LFH during the pandemic?

Given the potential for the LFH policy to be reinstated in response to future public health crises, it is essential to carefully examine parents' attitudes toward LFH. As highlighted by previous research, parents play a significant role in determining the success or challenges of implementing LFH policies (Daniela et al., 2021; Darragh & Franke, 2022; Lawrence & Fakuade, 2021). Identifying the factors that shape these attitudes is critical for ensuring the effectiveness of such policies while

addressing parents' concerns and circumstances. Although this study focuses on Indonesia, the findings and lessons learned can offer valuable insights for other countries that may face similar challenges in managing remote education during future crises.

2. Methods

2.1. Participants and Procedures

After providing their informed consent, a total of 254 parents or guardians of K-12 students from 24 out of 34 provinces in Indonesia participated in this study. Their ages ranged from 22 to 66 years ($M = 37.53$, $SD = 7.92$) with 74% identified as female. More detailed demographic information is provided in the results section. The participants filled out an online survey. We distributed the questionnaire, which was in Bahasa Indonesia via social media (e.g., WhatsApp, Twitter, Facebook, and Instagram) in June 2021, approximately 15 months after the Indonesian Minister of Education first announced the LFH policy and it was still the norm nationwide. It should be noted that we specifically instructed participants to respond to each psychological construct as an individual, not as a couple. Thus, while some information will reflect their household situation, the attitudes reflected in this study are those of the individual parent who completed the questionnaire and do not necessarily reflect those of their partner.

2.2. Measures

2.2.1. Sociodemographic information

We asked participants to report their monthly household income prior to and following the start of the COVID-19 pandemic, their work-from-home status and that of their partner, their educational attainment and that of their partner, their children's age/education level, and their home ownership of personal computer [PC] and mobile devices. We provided an appropriate option for all pertinent questions in the case of a single parent household.

2.2.2. Learning Activities

We provided participants with seven most common learning activities in addition to one open-ended option (i.e., "others"). We asked them to select any learning activities their children had participated in throughout the LFH period. We then asked participants to sort the selected learning activities according to the frequency they were given by the teachers/schools and also according to the child's preference (from the most favorite to the least favorite). Additionally, we elicited participants' preferences for educational activities for their children and categorized the activities from those they hoped to be given more often to those they wished to be given less.

2.2.3. Beliefs in COVID-19 conspiracy theories

We adopted six items from the study from (Bierwiazzonek et al., 2020) to measure social distancing practices and beliefs in COVID-19 conspiracy theories among parents. Apart from translating the items to Bahasa Indonesia, we contextualized one item to be more relatable to the respondent. As such, we changed it from "To what extent do you think the virus represents an attempt to hurt the Western world?" to "To what extent do you think the virus represents an attempt to hurt certain countries?". All six items were measured in a five-point Likert scale.

2.2.4. Attitudes toward LFH

To assess parents' attitudes toward the LFH policy in terms of its usefulness and demandingness from their own perspective, we developed a questionnaire based on seven items from (Pratama & Firmansyah, 2021) as well as four additional items to incorporate the impacts of LFH on children from their parents' perspective. All eleven items were measured in a five-point Likert scale. Cronbach's alpha was used to assess the reliability of the measurement items, and the result was a score of .77, which is slightly higher than in (Pratama & Firmansyah, 2021). We used factor analysis

to examine the validity and internal consistency of the measurement items, as well as to confirm that each measurement item corresponded to the appropriate latent construct.

2.3. Data Analysis

In this study, we employed latent class analysis (LCA) to identify unmeasured class or group membership among parents using categorical observed variables (i.e., their answer to the measurement items in the survey). We used the *gsem* function in STATA 15 with the logit model to predict the probability of each parent belonging to one of mutually exclusive latent classes. We used several goodness-of-fit indices, such as Likelihood-ratio [G2] test to evaluate the model fit and both Akaike information criterion [AIC] and Bayesian information criterion [BIC] to compare several different models when deciding how many latent classes to retain. Once all classes and their members were identified, we compared the results with the similar results from the previous year's study by Pratama and Firmansyah (2021) to see if there are significant changes in parents' attitudes toward LFH after one year. Finally, we employed hierarchical logistic regression analysis to examine if the same factors predicted parents' attitudes toward LFH even after one year and if beliefs in COVID-19 conspiracy significantly drive parents to be in the negative group after controlling for their demographic factors.

3. Results

3.1. Reported Learning Activities

Table 1 summarizes LFH activities reported by parents in 2021 and how they differ from the same activities reported in 2020. As we can observe, learning activities utilizing video conferences and learning management systems exhibited substantial growth, from 28% in 2020, to 58% and 52% in 2021, respectively. On the contrary, the use of free-to-air broadcast TV took a nosedive, from 53% in 2020 to 22% in 2021. Furthermore, except for learning activity using instant messaging that is relatively the same, the remainder exhibit a slight to moderate increase. For instance, learning activities involving traditional homework increased by 8% while the activities involving online assessment increased by 11%.

Table 1

Learning activities in LFH in 2020 and 2021

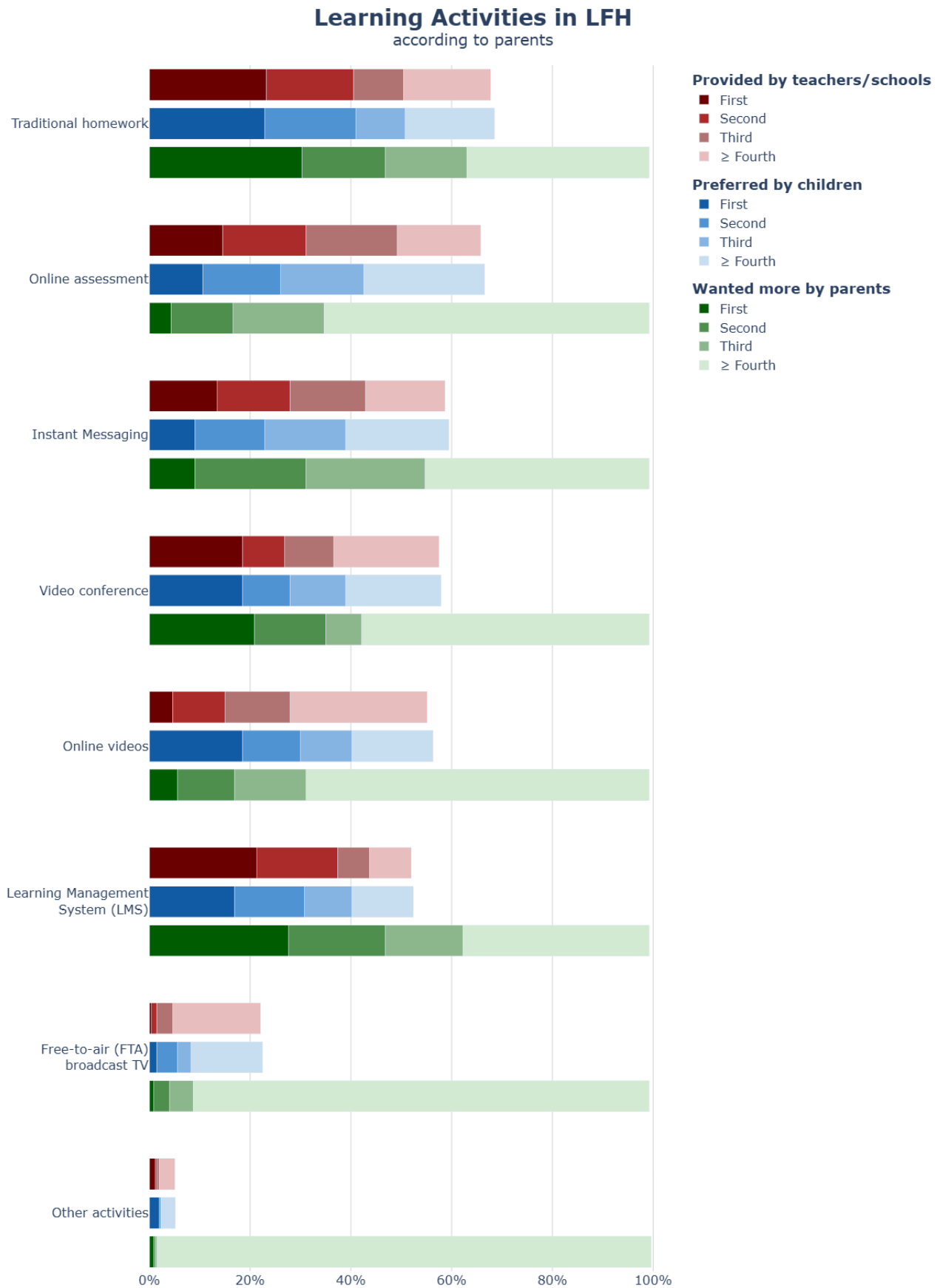
<i>Learning Activities</i>	<i>2020</i>	<i>2021</i>	<i>Difference</i>
Traditional homework	61%	69%	Up by 8%
Online assessments	56%	67%	Up by 11%
Instant messaging	58%	59%	Up by 1%
Video conference	28%	58%	Up by 30%
Online videos	52%	57%	Up by 5%
Learning Management Systems	28%	57%	Up by 24%
Free-to-air broadcast TV	53%	22%	Down by 31%

Note. Source for data in 2020: Pratama and Firmansyah (2021).

A more detailed report on the learning activities in 2021 is presented in Figure 1. It visualizes the extent to which the activities provided by teachers/schools were indeed preferred by children and the extent to which the activities had been expected by parents. As can be seen, parents wished that their children were given more learning activities involving traditional homework than those utilizing more advanced technology including online assessment, instant messaging, online videos, and learning management system [LMS].

Figure 1

Learning activities provided by teachers/schools, preferred by children and their parents in LFH



3.2. Parents with Pragmatic, Positive, and Negative Attitudes

As mentioned earlier, we employed latent class analysis to reveal groups of parents based on the distinct patterns of their compound attitudes toward the LFH policy following (Pratama & Firmansyah, 2021). In doing so, we incorporated multiple parameters including G², AIC, and BIC as presented in Table 2. We also coupled the process with a qualitative evaluation on ways in which the compound attitudes endorsed the demandingness and usefulness aspects of the policy, and how they differed from the attitudes in the previous year as reported by the previous study.

Table 2

The demographics of the recruited study participants

Model	G ²	df(G ²)	p	LL Model	AIC	BIC
1-Class	1017.75	2036	1.000	-1735.04	3492.07	3530.98
2-Class	622.97	2024	1.000	-1537.64	3121.29	3202.64
3-Class	572.63	2012	1.000	-1512.47	3094.95	3281.76
4-Class	538.68	2000	1.000	-1495.50	3084.00	3251.18

Note. This model is based on the analysis on 11 survey items measuring attitudes toward the LFH policy.

The latent class analysis yielded three mutually exclusive groups, which we named pragmatic (38%), positive (27%), and negative (35%) as summarized in Table 3. The first group did not exist in 2020. The second group had decreased in size. Meanwhile, the third group remained relatively the same in size. Additionally, the disengaged group that made up the least percentage of parents in 2020 no longer existed in 2021.

Table 3

Groups of parents based on their attitudes toward the LFH policy in 2020 and 2021

Attitudes	See LFH as	2020	2021	Notes
Disengaged	Neither useful nor demanding	23%	-	Disappeared after a year
Positive	Useful and not demanding	41%	27%	Dropped significantly
Negative	Not useful but demanding	36%	35%	Relatively the same
Pragmatic	Both useful and demanding	-	38%	Emerged as the largest group

Note. Source for data in 2020: Pratama and Firmansyah (2021)

Figure 2 illustrates the distribution of parents in each group and their agreements with each survey item measuring the demandingness and usefulness aspects of the LFH policy. Numbers inside the colored circles denote the percentage of parents in the respected group, who endorsed the indicator. For instance, in 2021, 81% of parents in the pragmatic group agreed that the LFH policy forced them to learn as opposed to 53% of parents in the positive group, who thought so. It also demonstrates the extent to which the attitudes diverged from the previous year. For example, the percentage of parents in the positive group agreeing that the policy is the best option amid the pandemic had increased dramatically from 58% in 2020 to 79% in 2021.

Figure 2 further highlights that parents in the negative group have intensified their opposition to the LFH policy immensely, except for their view on whether it is the best option in the face of a COVID-19 pandemic, which remained unchanged at 42%. After more than a year of the policy being implemented, parents in this group still saw no value in LFH and even perceived it more demanding than last year.

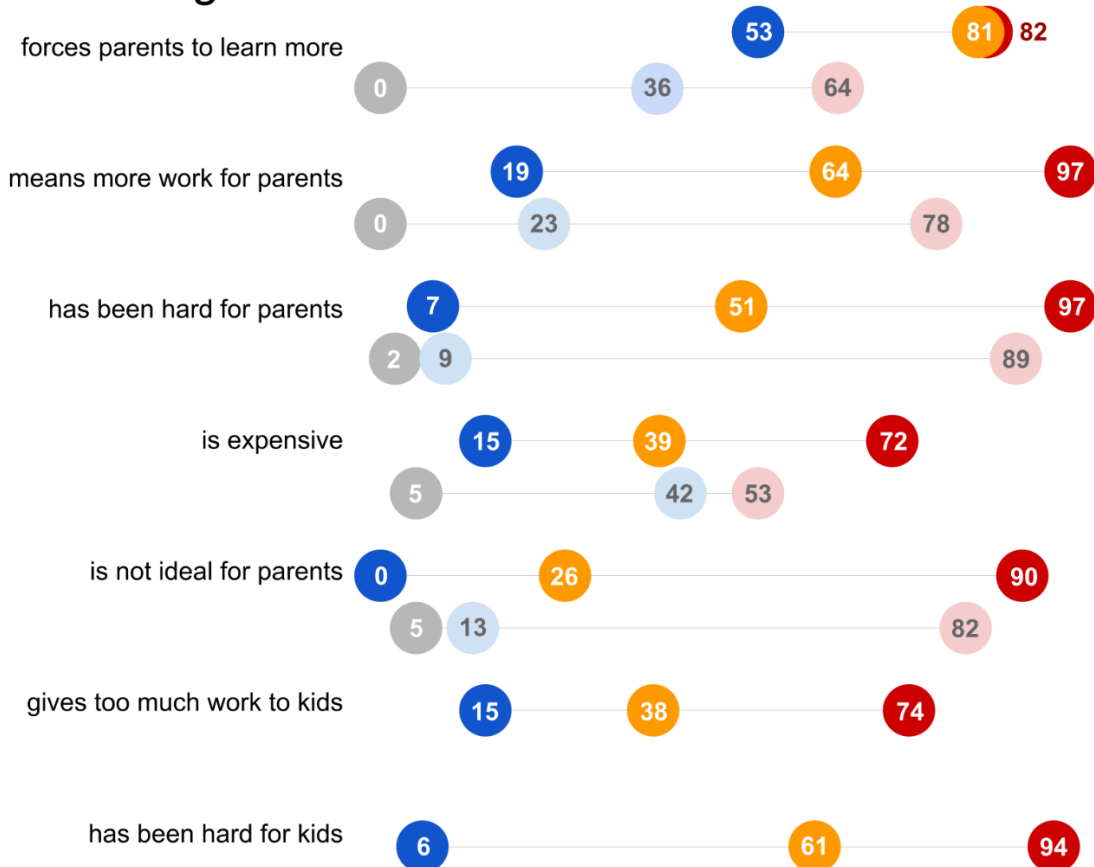
Figure 2

Percentage of parents in agreement with the usefulness and demandingness of LFH

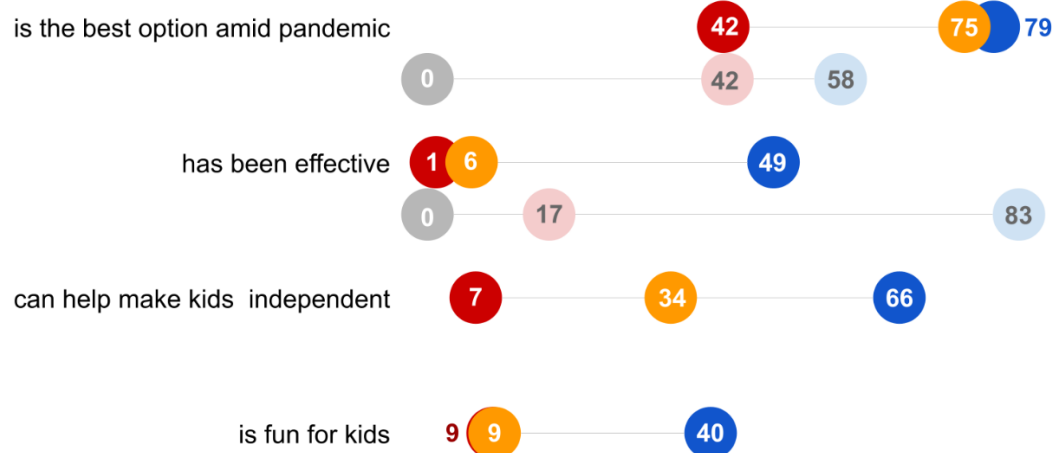
Percentage of Parents in Agreement that LFH ...

Attitudes in 2021 ● Pragmatic ● Positive ● Negative
Attitudes in 2020 ● Disengaged ● Positive ● Negative

Demandingness



Usefulness



Source for attitudes in 2020: Pratama & Firmansyah (2021)

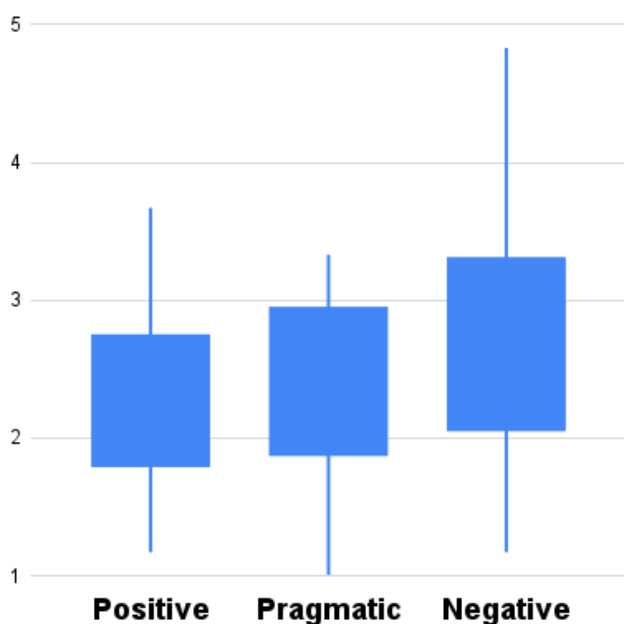
Note. The last two items measuring demandingness and usefulness aspects of the LFH were not measured in 2020.

3.3. Beliefs in COVID-19 Conspiracy among Parents

Figure 3 visualizes the distribution of scores representing the belief in the COVID-19 conspiracy theories for each group of parents. Higher scores indicate higher belief in conspiracy theories and lower scores indicate otherwise. As can be seen, the figure suggests that parents with negative attitudes towards the LFH policy tend to believe that the COVID-19 pandemic is just a conspiracy. In contrast, parents with positive attitudes toward the policy tend to not hold the belief.

Figure 3

Beliefs in COVID-19 conspiracy theories among parents



Note. Higher score means stronger beliefs in COVID-19 conspiracy theories.

We then performed a hierarchical logistic regression to investigate if the belief in the COVID-19 conspiracy theories was indeed associated with likelihoods for parents to be in the negative group. In doing so, we conducted three logistic regression analyses with positive and pragmatic groups combined as the reference since both agreed that the LFH policy was useful amid the COVID-19 pandemic. The first regression incorporates the same variables used by (Pratama & Firmansyah, 2021). The second regression introduces beliefs in COVID-19 conspiracy theories as an additional predictor and as a control variable. Finally, the last model includes the interaction terms between sex, age, and beliefs in COVID-19 conspiracy theories in the equation. The results are summarized in Table 4.

As can be seen in Table 4, the hierarchical logistic regression model indicates a significant association between the predictors and having negative attitudes toward LFH ($\chi^2(15) = 55.36$, $p < .001$). The second regression showed that parents having stronger beliefs in COVID-19 conspiracy theories are more likely to have negative attitudes toward LFH (OR = 2.71, SE = 0.78, $p = .001$). Furthermore, the last regression revealed that this association interacted with age and sex. Specifically, female parents with strong beliefs in COVID-19 conspiracy theories are much more likely to have negative attitudes toward the LFH policy (OR = 823.50, SE = 2406.57, $p = .022$). Likewise, albeit at a smaller magnitude, older parents with strong beliefs in COVID-19 conspiracy theories are more likely to have negative attitudes toward the policy (OR = 1.17, SE = 0.08, $p = .016$). In the next section, we will further discuss how these findings may affect not only the parents' attitudes toward LFH but also how they may shape their children's health and safety measures against COVID-19 or any other major health events in the future.

Table 4
Hierarchical Logistic Regression Estimates

Variable of Interest	Regression 1			Regression 2			Regression 3		
	OR	SE	p	OR	SE	p	OR	SE	p
Sex									
(Female)	0.89	0.30	.736	1.00	0.35	.999	< 0.01	< 0.01	.008**
Age									
(Years old)	1.03	0.02	.137	1.03	0.02	.148	0.68	0.11	.020*
Monthly Income									
(Low-income household)	1.67	0.65	.190	1.21	0.50	.649	1.22	0.52	.646
Work from Home									
(At least one parent)	1.08	0.39	.830	1.26	0.47	.535	1.24	0.47	.578
Educational Attainment									
(Postgraduate degree)	0.46	0.15	.019*	0.47	0.16	.024*	0.49	0.17	.037*
(No college)	0.82	0.39	.674	0.76	0.37	.580	0.85	0.42	.751
Children's Age									
(K-6 th graders at home)	2.83	1.47	.046*	3.20	1.75	.034*	4.14	2.44	.016*
Device Ownership at Home									
(PC - desktop/laptop)	0.49	0.17	.044*	0.47	0.18	.043*	0.44	0.17	.033*
(Mobile - smartphone/tablet)	1.08	0.54	.874	1.21	0.62	.714	1.09	0.58	.866
Beliefs in COVID-19 Conspiracy Theories				2.71	0.77	<.001***	< 0.01	0.01	.030*
Interaction Terms									
(Conspiracy x Female)							1046.11	2991.13	.015*
(Conspiracy x Age)							1.16	0.07	.018*
(Female x Age)							1.63	0.33	.016*
(Conspiracy x Female x Age)							0.84	0.06	.026*
Constant	.12	.15	.085	.01	.01	.001**	138558.8	839662.9	.051
Model χ^2	26.47**			39.89***			49.48***		
Pseudo R ²	.081			.121			.150		
df	9			10			14		
Observation	254			254			254		

Note. Dependent variable: Likelihood for parents to have negative attitudes toward LFH policy. Odds-ratio [OR]; standard error [SE]; * $p < .05$. ** $p < .01$ *** $p < .001$

4. Discussion

This study has documented changes in the ways in which parents perceived the LFH policy after more than a year of its implementation in Indonesia during the COVID-19 pandemic. In 2020, the majority of parents (41%) had positive attitudes toward the policy (positive group), viewing LFH as useful in dealing with the pandemic and less demanding for them (Pratama & Firmansyah, 2021). However, by 2021, this number had decreased by 14%. In contrast, the majority of parents (38%) adopted a pragmatic attitude toward the policy (pragmatic group), recognizing LFH as both useful and demanding. Meanwhile, the proportion of parents holding negative attitudes toward the policy (negative group), who saw LFH as ineffective and burdensome, remained relatively stable, accounting for 35% of the sample. Notably, by 2021, disengaged parents (disengaged group), who neither found LFH useful nor demanding, were virtually nonexistent. This shift suggests that, as LFH persisted, parents who initially hoped for a short-term solution found themselves increasingly involved in their children's educational activities.

The emergence of the pragmatic group and the declining positive group likely reflect the growing number of parents who felt that LFH demanded more of them as time went on. Our findings showed that the percentage of parents who reported learning new skills to support LFH increased from 47% in 2020 to 74% in 2021. This shift can be attributed to changes in the composition of learning activities, with a significant increase in the use of video conferences and Learning Management Systems, which require more advanced technology, such as laptops and stable internet connections. Parents, especially those lacking digital literacy or the means to access these resources, found themselves under increasing pressure to support their children's education, often incurring additional expenses and spending more time troubleshooting technological issues (Agaton & Cueto, 2021). Even parents who were more familiar with digital tools faced ongoing challenges, such as navigating software updates and solving connectivity issues. This growing burden is reflected in the 20% increase in the number of parents who agreed that LFH was causing significant difficulties for them by 2021.

Our findings also help explain why many Indonesian parents favored traditional homework over more technologically demanding learning activities, such as LMS, video conferences, online assessments, and video-based instruction. Traditional homework, which typically only requires basic tools like pen and paper, minimizes the need for advanced technology and therefore reduces the workload on parents. Moreover, traditional homework is more familiar to parents, who are likely to have encountered similar assignments when they were students, making it easier for them to assist their children without having to learn new skills. However, while traditional homework may benefit parents, it may not be as efficient from a pedagogical standpoint. Studies suggest that LMS, with features like automatic scoring and self-paced quizzes, can enhance student productivity and independence, while also helping to organize lessons more effectively (Georgas, 2014).

Although the percentage of parents with negative attitudes toward LFH did not rise in 2021, their presence remains a concern. Previous research has shown that parents play a critical role in determining the success of policies like LFH (Daniela et al., 2021; Darragh & Franke, 2022; Lawrence & Fakuade, 2021). Our study revealed that negative attitudes toward LFH were strongly associated with beliefs in COVID-19 conspiracy theories. Parents who believed the pandemic was not real or exaggerated were more likely to view LFH as unnecessary and burdensome. These beliefs may have not only undermined parental support for their children's education during LFH but also influenced how their children adhered to public health measures during the pandemic. Prior studies have shown that beliefs in COVID-19 conspiracy theories are linked to harmful behaviors, such as resistance to social distancing (Bierwiazzonek et al., 2020), refusal to wear masks in public (Prichard & Christman, 2020), and reluctance to get vaccinated (Sallam et al., 2021; Yang et al., 2021). Children may have unconsciously adopted these behaviors from their parents, thereby putting themselves and others at risk.

Moreover, our study identified a significant interaction between gender (female) and age (older) in the relationship between conspiracy beliefs and negative attitudes toward LFH. In many cases, children spend more time with their mothers than their fathers (Castelli et al., 2007), which may give mothers greater influence over their children's behavior. While we did not investigate whether mothers' beliefs in conspiracy theories directly impacted their children's behavior, previous research suggests that parental beliefs do shape children's attitudes and actions (Kim et al., 2013; Murphey, 1992). For example, many decisions about COVID-19 safety measures, such as vaccination, are made by parents or guardians (Bell et al., 2020). If parents do not believe in vaccines or other public health measures, their children are less likely to comply with these measures. However, it is important to emphasize that the association between gender, age, and beliefs in conspiracy theories is not necessarily causal. Further research is needed to explore why, in Indonesia, certain demographics may be more prone to adopting conspiracy theories.

Finally, given Indonesia's high religiosity, where 98% of the population views religion as "very important" (Burge, 2023), many parents may have turned to religious coping mechanisms to manage the stress and uncertainty of the pandemic. Research has shown that religiosity can

sometimes correlate with a higher endorsement of conspiracy theories, particularly in more conservative or politically right-leaning groups (Frenken et al., 2023; Molenda et al., 2024). Additionally, coping strategies involving non-scientific explanations, such as conspiracy beliefs, may provide comfort during times of crisis (Molenda et al., 2024). In highly religious communities, these beliefs may have shaped negative attitudes toward policies like LFH.

5. Implications

This study has revealed a decline in the number of parents in the positive group and the emergence of the pragmatic group after more than a year of LFH implementation in Indonesia during the COVID-19 pandemic. These findings highlight that, even parents who initially supported the policy's effectiveness eventually reached a point where that support transformed into a burden. Our analysis suggests that the composition of learning activities played a significant role in this shift, as parents increasingly viewed LFH as hard and time-consuming.

To mitigate this, we recommend that parents and teachers engage in dialogue before each semester to discuss the type and amount of learning activities. Such conversations would allow both parties to share their concerns and negotiate a balanced approach that accommodates both the educational needs of students and the practical limitations of parents. Additionally, schools should provide clear information about common technological challenges faced during LFH, along with practical solutions. This proactive support could alleviate much of the burden parents face, saving them time and effort by preventing them from having to troubleshoot issues on their own.

Our study has also underscored the significant association between negative attitudes toward LFH and beliefs in COVID-19 conspiracy theories. Given that children spent more time with their parents than with teachers during LFH, parental beliefs may have influenced not only their children's educational experiences but also their attitudes toward public health measures during the pandemic. Therefore, schools and teachers should develop initiatives to address misinformation and conspiracy beliefs, both for parents and students. Specialized learning activities during LFH could help provide children with accurate information about the pandemic, which in turn could influence their parents. As prior research has shown, lower levels of analytical thinking are associated with a tendency to believe in conspiracy theories (Swami et al., 2014). Schools should consider incorporating activities that promote analytical skills, helping both students and their parents to critically assess the information they encounter.

Additionally, the strong association between conspiracy beliefs and negative attitudes toward LFH, especially in highly religious contexts like Indonesia, emphasizes the need for culturally sensitive educational interventions. Schools and teachers should recognize the influence of religious beliefs on how parents interpret pandemic-related information. Collaborating with community leaders and religious figures to deliver scientifically accurate information in culturally appropriate ways could help mitigate the spread of misinformation. Our findings also suggest the need for targeted interventions to address the spread of misinformation, particularly among highly religious or conservative groups. Recent studies indicate that right-wing media sources play a significant role in propagating conspiracy theories, which can further shape negative attitudes toward public health measures and education policies (Yu et al., 2024). This suggests that educational interventions should not only focus on students but also on parents, with particular attention to media literacy and critical thinking. This approach is crucial not only for addressing pandemic-related beliefs but also for preparing for any future educational disruptions that may arise in a rapidly evolving global context.

6. Limitations

This research utilized an online questionnaire distributed through social media, allowing efficient data collection from parents in 24 out of 34 provinces in Indonesia. However, this approach likely excluded parents who do not use social media or lack internet access, resulting in a sample biased toward digitally connected individuals. Consequently, parents facing greater challenges with LFH due to limited technological resources may have been underrepresented.

Moreover, as this study was conducted during the COVID-19 pandemic's peak, the findings reflect attitudes specific to a crisis context, which may not persist after the return to regular schooling. Additionally, the sample predominantly included mothers, which is consistent with traditional parental involvement patterns in Indonesia (Rahmah, 2020; Yulianti et al., 2019), but at the same time limiting insights into paternal perspectives.

7. Future Work

Researchers in the future should consider employing offline methodologies, such as paper-based surveys or in-depth interviews, to include parents not reached through online platforms, providing a more comprehensive understanding of parental attitudes toward LFH. Additionally, given Indonesia's context as a country with high religiosity, future studies could build upon recent findings from (Kavadias et al., 2024), which examined the complex relationship between schooling and religiosity in many countries, to investigate how this intersection specifically shapes attitudes toward education and public health policies in Indonesia and similar contexts. Exploring gender dynamics in parental involvement in contexts with a more balanced distribution between mothers and fathers could also enhance the understanding of how gender shapes attitudes toward remote learning policies. Finally, considering evidence that conspiracy theories may be influenced by political and media environments, future research could investigate these dynamics to better understand how parental attitudes toward education and health policies are formed.

8. Conclusion

Although the COVID-19 pandemic has ended and educational institutions have returned to in-person learning, the insights from this study remain pertinent for managing future educational disruptions. Recognizing how parental attitudes are influenced by cultural, technological, and religious factors will be crucial in developing effective remote learning strategies. Policymakers and educators can leverage these findings to better balance the needs of students, teachers, and parents, ensuring education remains accessible and effective in any crisis.

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Data availability: The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

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References

- Agaton, C. B., & Cueto, L. J. (2021). Learning at home: Parents' lived experiences on distance learning during COVID-19 pandemic in the Philippines. *International Journal of Evaluation and Research in Education*, 10(3), Article 3. <https://doi.org/10.11591/ijere.v10i3.21136>
- Asrani, P., Eapen, M. S., Hassan, M. I., & Sohal, S. S. (2021). Implications of the second wave of COVID-19 in India. *The Lancet Respiratory Medicine*, 9(9), e93–e94. [https://doi.org/10.1016/S2213-2600\(21\)00312-X](https://doi.org/10.1016/S2213-2600(21)00312-X)
- Astapova, A. (2020). Rumours, urban legends and the verbal transmission of conspiracy theories. In *Routledge Handbook of Conspiracy Theories*. Routledge.
- Auger, K. A., Shah, S. S., Richardson, T., Hartley, D., Hall, M., Warniment, A., Timmons, K., Bosse, D., Ferris, S. A., Brady, P. W., Schondelmeyer, A. C., & Thomson, J. E. (2020). Association between statewide school closure and Covid-19 incidence and mortality in the US. *JAMA*, 324(9), 859–870. <https://doi.org/10.1001/jama.2020.14348>

- Barkun, M. (2015). Conspiracy theories as stigmatized knowledge. *Diogenes*, 62(3–4), 114–120. <https://doi.org/10.1177/0392192116669288>
- Bell, S., Clarke, R., Paterson, P., & Mounier-Jack, S. (2020). Parents' and guardians' views and experiences of accessing routine childhood vaccinations during the coronavirus (COVID-19) pandemic: A mixed methods study in England. *PLOS ONE*, 15(12), e0244049. <https://doi.org/10.1371/journal.pone.0244049>
- Bierwiazzonek, K., Kunst, J. R., & Pich, O. (2020). Belief in COVID-19 conspiracy theories reduces social distancing over time. *Applied Psychology: Health and Well-Being*, 12(4), 1270–1285. <https://doi.org/10.1111/aphw.12223>
- Brauner, J. M., Mindermann, S., Sharma, M., Johnston, D., Salvatier, J., Gavenčiak, T., Stephenson, A. B., Leech, G., Altman, G., Mikulik, V., Norman, A. J., Monrad, J. T., Besiroglu, T., Ge, H., Hartwick, M. A., Teh, Y. W., Chindelevitch, L., Gal, Y., & Kulveit, J. (2021). Inferring the effectiveness of government interventions against COVID-19. *Science*, 371(6531), eabd9338. <https://doi.org/10.1126/science.abd9338>
- Bubb, S., & Jones, M.-A. (2020). Learning from the COVID-19 home-schooling experience: Listening to pupils, parents/careers and teachers. *Improving Schools*, 23(3), 209–222. <https://doi.org/10.1177/1365480220958797>
- Burge, R. (2023, December 27). Examining the countries that are the most (and least) religious [News]. *Religion Unplugged*. <https://religionunplugged.com/news/2023/12/25/what-countries-are-the-most-religious-which-ones-are-the-least>
- Burki, T. K. (2021). Lifting of COVID-19 restrictions in the UK and the Delta variant. *The Lancet Respiratory Medicine*, 9(8), e85. [https://doi.org/10.1016/S2213-2600\(21\)00328-3](https://doi.org/10.1016/S2213-2600(21)00328-3)
- Castelli, L., Carraro, L., Tomelleri, S., & Amari, A. (2007). White children's alignment to the perceived racial attitudes of the parents: Closer to the mother than the father. *British Journal of Developmental Psychology*, 25(3), 353–357. <https://doi.org/10.1348/026151006X159851>
- Castro, M. C., Kim, S., Barberia, L., Ribeiro, A. F., Gurzenda, S., Ribeiro, K. B., Abbott, E., Blossom, J., Rache, B., & Singer, B. H. (2021). Spatiotemporal pattern of COVID-19 spread in Brazil. *Science*, 372(6544), 821–826. <https://doi.org/10.1126/science.abh1558>
- Cui, S., Zhang, C., Wang, S., Zhang, X., Wang, L., Zhang, L., Yuan, Q., Huang, C., Cheng, F., Zhang, K., & Zhou, X. (2021). Experiences and attitudes of elementary school students and their parents toward online learning in china during the COVID-19 pandemic: Questionnaire study. *Journal of Medical Internet Research*, 23(5), e24496. <https://doi.org/10.2196/24496>
- Daniela, L., Rubene, Z., & Rüdolf, A. (2021). Parents' perspectives on remote learning in the pandemic context. *Sustainability*, 13(7), Article 7. <https://doi.org/10.3390/su13073640>
- Darragh, L., & Franke, N. (2022). Lessons from lockdown: parent perspectives on home-learning mathematics during COVID-19 lockdown. *International Journal of Science and Mathematics Education*, 20(7), 1521–1542. <https://doi.org/10.1007/s10763-021-10222-w>
- Dong, C., Cao, S., & Li, H. (2020). Young children's online learning during COVID-19 pandemic: Chinese parents' beliefs and attitudes. *Children and Youth Services Review*, 118, 105440. <https://doi.org/10.1016/j.childyouth.2020.105440>
- Douglas, K. M. (2021). COVID-19 conspiracy theories. *Group Processes & Intergroup Relations*, 24(2), 270–275. <https://doi.org/10.1177/1368430220982068>
- Douglas, K. M., & Sutton, R. M. (2015). Climate change: Why the conspiracy theories are dangerous. *Bulletin of the Atomic Scientists*, 71(2), 98–106. <https://doi.org/10.1177/0096340215571908>
- Douglas, K. M., Sutton, R. M., Callan, M. J., Dawtry, R. J., & Harvey, A. J. (2016). Someone is pulling the strings: Hypersensitive agency detection and belief in conspiracy theories. *Thinking & Reasoning*, 22(1), 57–77. <https://doi.org/10.1080/13546783.2015.1051586>
- Dyer, O. (2021a). Covid-19: Delta infections threaten herd immunity vaccine strategy. *BMJ*, 374, 1933. <https://doi.org/10.1136/bmj.n1933>
- Dyer, O. (2021b). Covid-19: Indonesia becomes Asia's new pandemic epicentre as delta variant spreads. *BMJ*, 374, n1815. <https://doi.org/10.1136/bmj.n1815>
- Flynn, N., Keane, E., Davitt, E., McCauley, V., Heinz, M., & Mac Ruairc, G. (2021). 'Schooling at home' in Ireland during COVID-19: Parents' and students' perspectives on overall impact, continuity of interest, and impact on learning. *Irish Educational Studies*, 40(2), 217–226. <https://doi.org/10.1080/03323315.2021.1916558>
- Frenken, M., Bilewicz, M., & Imhoff, R. (2023). On the Relation Between Religiosity and the Endorsement of Conspiracy Theories: The Role of Political Orientation. *Political Psychology*, 44(1), 139–156. <https://doi.org/10.1111/pops.12822>
- Georgas, H. (2014). The implementation of an independent and self-paced online library orientation for

- freshman students and the use of Sakai as a quiz management system (QMS). *College & Undergraduate Libraries*, 21(1), 56–75. <https://doi.org/10.1080/10691316.2014.877737>
- Goertzel, T. (1994). Belief in conspiracy theories. *Political Psychology*, 15(4), 731–742. <https://doi.org/10.2307/3791630>
- Grzesiak-Feldman, M. (2013). The effect of high-anxiety situations on conspiracy thinking. *Current Psychology*, 32(1), 100–118. <https://doi.org/10.1007/s12144-013-9165-6>
- Haug, N., Geyrhofer, L., Londei, A., Dervic, E., Desvars-Larrive, A., Loreto, V., Pinior, B., Thurner, S., & Klimek, P. (2020). Ranking the effectiveness of worldwide COVID-19 government interventions. *Nature Human Behaviour*, 4(12), 1303–1312. <https://doi.org/10.1038/s41562-020-01009-0>
- Jelińska, M., & Paradowski, M. B. (2021). Teachers' perception of student coping with emergency remote instruction during the COVID-19 pandemic: the relative impact of educator demographics and professional adaptation and adjustment. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.648443>
- Karana, K. P. (2022, July 13). *As children in Indonesia return to school, UNICEF calls for urgent action to address learning crisis*. UNICEF Indonesia. <https://www.unicef.org/>
- Kavadias, L., Spruyt, B., & Kuppens, T. (2024). Religious life in schooled society? A global study of the relationship between schooling and religiosity in 76 countries. *International Journal of Comparative Sociology*, 65(3), 247–270. <https://doi.org/10.1177/00207152231177238>
- Kim, E. M., Sheridan, S. M., Kwon, K., & Koziol, N. (2013). Parent beliefs and children's social-behavioral functioning: The mediating role of parent-teacher relationships. *Journal of School Psychology*, 51(2), 175–185. <https://doi.org/10.1016/j.jsp.2013.01.003>
- Lau, E. Y. H., Li, J.-B., & Lee, K. (2021). Online Learning and Parent Satisfaction during COVID-19: Child Competence in Independent Learning as a Moderator. *Early Education and Development*, 32(6), 830–842. <https://doi.org/10.1080/10409289.2021.1950451>
- Launius, R. (2010, January). *Denying the Apollo moon landings: conspiracy and questioning in modern american history* [Paper presentation]. 48th AIAA Aerospace Sciences Meeting Including the New Horizons Forum and Aerospace Exposition, American Institute of Aeronautics and Astronautics, Orlando, Florida. <https://doi.org/10.2514/6.2010-1131>
- Lawrence, K. C., & Fakuade, O. V. (2021). Parental involvement, learning participation and online learning commitment of adolescent learners during the COVID-19 lockdown. *Research in Learning Technology*, 29, 25–44. <https://doi.org/10.25304/rlt.v29.2544>
- Levinthal, C., Kuusisto, E., & Tirri, K. (2021). How Finnish and Portuguese Parents' Implicit Beliefs About Learning Actualize at Home. *Frontiers in Education*, 6, 635203. <https://doi.org/10.3389/feduc.2021.635203>
- Mathieu, E., Ritchie, H., Ortiz-Ospina, E., Roser, M., Hasell, J., Appel, C., Giattino, C., & Rodés-Guirao, L. (2021). A global database of COVID-19 vaccinations. *Nature Human Behaviour*, 5(7), 947–953. <https://doi.org/10.1038/s41562-021-01122-8>
- Mathieu, E., Ritchie, H., Rodés-Guirao, L., Appel, C., Giattino, C., Hasell, J., Macdonald, B., Dattani, S., Beltekian, D., Ortiz-Ospina, E., & Roser, M. (2020). *Coronavirus Pandemic (COVID-19)*. *Our World in Data*. <https://ourworldindata.org/covid-vaccinations>
- Michellini, E., Bortoletto, N., & Porrovecchio, A. (2021). Outdoor physical activity during the first wave of the covid-19 pandemic. a comparative analysis of government restrictions in Italy, France, and Germany. *Frontiers in Public Health*, 9, 625745. <https://doi.org/10.3389/fpubh.2021.615745>
- Molenda, Z., Marchlewska, M., Karakula, A., Szczepańska, D., Rogoza, M., Green, R., Cislak, A., & Douglas, K. M. (2024). Coping strategies and belief in COVID-19 conspiracy theories. *British Journal of Social Psychology*, 63(1), 319–339. <https://doi.org/10.1111/bjso.12684>
- Murphey, D. A. (1992). Constructing the child: Relations between parents' beliefs and child outcomes. *Developmental Review*, 12(2), 199–232. [https://doi.org/10.1016/0273-2297\(92\)90009-Q](https://doi.org/10.1016/0273-2297(92)90009-Q)
- Muthuprasad, T., Aiswarya, S., Aditya, K. S., & Jha, G. K. (2021). Students' perception and preference for online education in India during COVID -19 pandemic. *Social Sciences & Humanities Open*, 3(1), 100101. <https://doi.org/10.1016/j.ssaho.2020.100101>
- Nie, J.-B. (2020). In the shadow of biological warfare: conspiracy theories on the origins of covid-19 and enhancing global governance of biosafety as a matter of urgency. *Journal of Bioethical Inquiry*, 17(4), 567–574. <https://doi.org/10.1007/s11673-020-10025-8>
- Pratama, A. R. (2017). Exploring Personal Computing Devices Ownership Among University Students in Indonesia. In J. Choudrie, M. Islam, F. Wahid, J. Bass, & J. Priyatma (Eds.), *Information and communication technologies for development: ICT4D 2017- IFIP advances in information and communication technology* (pp. 835–841). Springer. https://doi.org/10.1007/978-3-319-59111-7_70

- Pratama, A. R., & Firmansyah, F. M. (2021). Disengaged, positive, or negative: parents' attitudes toward learning from home amid COVID-19 pandemic. *Journal of Child and Family Studies*, 30(7), 1803–1812. <https://doi.org/10.1007/s10826-021-01982-8>
- Pratama, A. R., & Scarlatos, L. L. (2020a). Ownership and use of mobile devices among adolescents in Indonesia. *Journal of Educational Technology Systems*, 48(3), 356–384. <https://doi.org/10.1177/0047239519886584>
- Pratama, A. R., & Scarlatos, L. L. (2020b). The roles of device ownership and infrastructure in promoting e-learning and m-learning in Indonesia. *International Journal of Mobile and Blended Learning*, 12(4), 1–16. <https://doi.org/10.4018/IJMBL.2020100101>
- Prichard, E. C., & Christman, S. D. (2020). Authoritarianism, conspiracy beliefs, gender and Covid-19: links between individual differences and concern about Covid-19, mask wearing behaviors, and the tendency to blame china for the virus. *Frontiers in Psychology*, 11, 597671. <https://doi.org/10.3389/fpsyg.2020.597671>
- Rahmah, F. (2020). Fathers' involvement in early childhood education in Indonesia. In W. Strielkowski, J. M. Black, S. A. Butterfield, C. Chang, J. Cheng, F. P. Dumanig, R. Al-Mabuk, M. Urban, & S. Webb (Eds.), *Advances in social science, education and humanities research* (pp. 125–130). <https://doi.org/10.2991/assehr.k.200808.024>
- Ribeiro, F. S., Braun Janzen, T., Passarini, L., & Vanzella, P. (2021). Exploring changes in musical behaviors of caregivers and children in social distancing during the COVID-19 outbreak. *Frontiers in Psychology*, 12, 633499. <https://doi.org/10.3389/fpsyg.2021.633499>
- Romer, D., & Jamieson, K. H. (2021). Patterns of media use, strength of belief in covid-19 conspiracy theories, and the prevention of Covid-19 from March to July 2020 in the United States: Survey Study. *Journal of Medical Internet Research*, 23(4), e25215. <https://doi.org/10.2196/25215>
- Roy, B., Dhillon, J. K., Habib, N., & Pugazhandhi, B. (2021). Global variants of COVID-19: Current understanding. *Journal of Biomedical Sciences*, 8(1), Article 1. <https://doi.org/10.3126/jbs.v8i1.38453>
- Sabino, E. C., Buss, L. F., Carvalho, M. P. S., Prete, C. A., Crispim, M. A. E., Fraiji, N. A., Pereira, R. H. M., Parag, K. V., da Silva Peixoto, P., Kraemer, M. U. G., Oikawa, M. K., Salomon, T., Cucunuba, Z. M., Castro, M. C., de Souza Santos, A. A., Nascimento, V. H., Pereira, H. S., Ferguson, N. M., Pybus, O. G., Kucharski, A. & Faria, N. R. (2021). Resurgence of COVID-19 in Manaus, Brazil, despite high seroprevalence. *The Lancet*, 397(10273), 452–455. [https://doi.org/10.1016/S0140-6736\(21\)00183-5](https://doi.org/10.1016/S0140-6736(21)00183-5)
- Sallam, M., Dababseh, D., Eid, H., Al-Mahzoum, K., Al-Haidar, A., Taim, D., Yaseen, A., Ababneh, N. A., Bakri, F. G., & Mahafzah, A. (2021). High rates of Covid-19 vaccine hesitancy and its association with conspiracy beliefs: a study in Jordan and Kuwait among Other Arab Countries. *Vaccines*, 9(1), Article 1. <https://doi.org/10.3390/vaccines9010042>
- Shahsavari, S., Holur, P., Wang, T., Tangherlini, T. R., & Roychowdhury, V. (2020). Conspiracy in the time of corona: Automatic detection of emerging COVID-19 conspiracy theories in social media and the news. *Journal of Computational Social Science*, 3(2), 279–317. <https://doi.org/10.1007/s42001-020-00086-5>
- Su, Y., Lee, D. K. L., Xiao, X., Li, W., & Shu, W. (2021). Who endorses conspiracy theories? A moderated mediation model of Chinese and international social media use, media skepticism, need for cognition, and COVID-19 conspiracy theory endorsement in China. *Computers in Human Behavior*, 120, 106760. <https://doi.org/10.1016/j.chb.2021.106760>
- Swami, V., Voracek, M., Stieger, S., Tran, U. S., & Furnham, A. (2014). Analytic thinking reduces belief in conspiracy theories. *Cognition*, 133(3), 572–585. <https://doi.org/10.1016/j.cognition.2014.08.006>
- Thacker, P. D. (2021). The covid-19 lab leak hypothesis: Did the media fall victim to a misinformation campaign? *BMJ*, 374, n1656. <https://doi.org/10.1136/bmj.n1656>
- van Prooijen, J.-W., & Jostmann, N. B. (2013). Belief in conspiracy theories: The influence of uncertainty and perceived morality. *European Journal of Social Psychology*, 43(1), 109–115. <https://doi.org/10.1002/ejsp.1922>
- Yang, Z., Luo, X., & Jia, H. (2021). Is it all a conspiracy? conspiracy theories and people's attitude to covid-19 vaccination. *Vaccines*, 9(10), Article 10. <https://doi.org/10.3390/vaccines9101051>
- Yu, W., Chen, Z., Meng, X., & Yan, Q. (2024). Propagating COVID-19 Conspiracy Theories: The Influence of Right-Wing Sources. *Sage Open*, 14(2), 21582440241258026. <https://doi.org/10.1177/21582440241258026>
- Yulianti, K., Denessen, E., & Droop, M. (2019). Indonesian parents' involvement in their children's education: a study in elementary schools in urban and rural Java, Indonesia. *School Community Journal*, 29(1), 253–278.